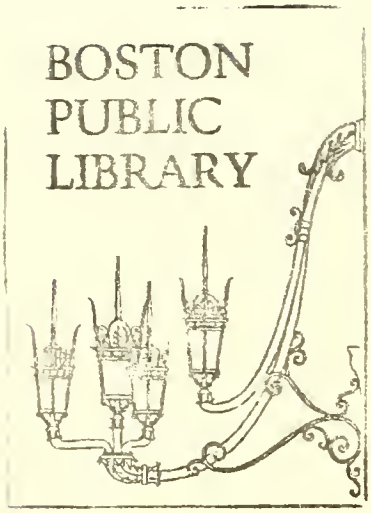
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SOUTH BOSTON BYPASS ROAD

INTERIM REPORT

Prepared For The

Boston Redevelopment Authority

By

Fay, Spofford & Thorndike, Inc.
Engineers

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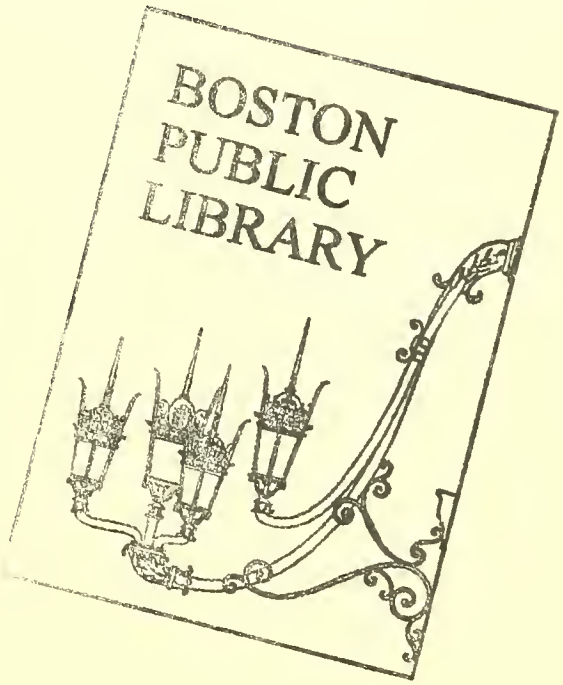

SOUTH BOSTON BYPASS ROAD

INTERIM REPORT

This project is being performed by Fay, Spofford & Thorndike, Inc. (FST) at the request of the Boston Redevelopment Authority in order to develop and evaluate potential alternative routes for construction-related truck traffic in South Boston, with the emphasis being in keeping these trucks, particularly those from the proposed Fan Pier Project, off local streets. Because of time constraints, any such routes must, by nature, be capable of being implemented in a relatively short time period.

The major impetus for this project has been the announcements of several major private and public development projects expected to occur in the northern portion of South Boston, each of which could potentially generate hundreds of daily truck trips while under construction. These proposed projects include, among others, the Fan Pier and Pier 4 Developments as well as the Third Harbor Tunnel/Depressed Central Artery project. Because of feelings expressed many times over the years by the South Boston community, it is the desire of the City to minimize, to the extent possible, impacts from the construction of these projects on the residential neighborhoods and local streets of South Boston.

The general geographical area of South Boston covered by this project ranges from the Northern Avenue area south to the vicinity of Southampton Street and from the Southeast Expressway/Central Artery east to D Street. An existing railroad corridor running from Northern Avenue to Dorchester Avenue has received prime attention as a possible location for a new route providing connections between construction sites and the regional highway system.

Other objectives of the City in sponsoring this project have been to cooperate with other City and State agencies which are also examining this issue and to develop a roadway which could also play a permanent role in helping to solve the truck access problem in South Boston.

Geographically, South Boston is somewhat isolated from the remainder of Boston by both natural and man-made features. To the east and north are Boston Harbor and the Boston Inner Harbor, respectively. The Fort Point Channel on the west separates South Boston from the downtown business district while several transportation (rail and highway) corridors, also to the west, provide a boundary between South Boston and the Boston neighborhoods of the South End and Dorchester. Most vehicles, and particularly trucks, desiring to access/egress South Boston must cross these barriers on one of numerous existing bridges. However, because many of these existing bridges are structurally inadequate to handle heavily-loaded

trucks, and because the City has established specific truck routes in an attempt to keep the large volume of trucks going to and from the industrialized northern section of South Boston from utilizing streets through the residential neighborhoods in the southern section, the pattern of truck activity has become concentrated along certain roadways. This concentration of vehicles on to a limited number of roadways, some of which are narrow and in poor condition, has resulted in many trucks diverting off the truck route into the residential neighborhoods in an attempt to avoid traffic congestion and to save time. As a result of recognizing this problem, the BRA, in association with the Massachusetts Port Authority (Massport), engaged the services of Fay, Spofford & Thorndike, Inc. and to examine the situation and make recommendations. The result of that effort was a Preliminary Environmental Assessment of what was then called the Seaport Access System and which was completed in 1980. Although concerned for the most part with general, not construction-related, truck traffic, the results of that study have served as a useful source of data for this project.

Faced with the possible initiation of construction of the Fan Pier/Pier 4 Development projects within the next year, the BRA has assumed the lead responsibility for undertaking a study of potential new off-roadway bypass routes which could be used by construction vehicles needed for these projects. The BRA

has also played a major role in participating in discussions with other City, State, and Federal organizations who are either involved in projects of their own in this area and/or who have activities in the area which could be subject to impacts from any new South Boston Bypass Road, as this project is being titled. Coordination with these agencies has taken the form of individual meetings along with a series of Interagency Meetings chaired by representatives of the Massachusetts Department of Public Works (MDPW) and held at 99 High Street in Boston. Data has been freely exchanged between all participating parties in order to avoid duplication of effort. In addition to the MDPW, active participants in these meetings have included the Massachusetts Executive Office of Transportation & Construction (EOTC), the Massachusetts Port Authority (Massport), the Massachusetts Bay Transportation Authority (MBTA), and the City of Boston Traffic and Parking Development (BTPD), along with various consultants working for these agencies.

The interest of the MDPW and the EOTC in this project stems from their desire to serve the numerous trucks which will be associated with the construction of the Third Harbor Tunnel and the Depressed Central Artery. Massport is interested in a roadway which will serve their existing and planned activities in South Boston while, at the same time, possibly being available for use by busses connecting the South Shore and

Logan Airport via a new proposed cross-harbor ferry service from South Boston. The BTPD is presently conducting a study of existing truck routes in South Boston and sees a Bypass Road as providing an alternate routing through South Boston for non-construction-related trucks in the short- and/or long-term. Involvement of the MBTA relates to their concern of potential impacts of a Bypass Road on their existing and planned activities, such as the Cabot Bus Garage and Red Line Maintenance Facility, as well as the proposed restoration of commuter rail service to the South Shore via the so-called Old Colony railroad right-of-way. Their Red Line and proposed commuter rail operations are both viewed as mitigation measures to the construction of the Third Harbor Tunnel/Depressed Central Artery, as is the construction of the Bypass Road, itself. Finally, the Massachusetts Water Resources Authority (MWRA), although not directly represented at the Interagency Meetings, is known to be considering a South Boston location as a staging area for the construction of major new sewage treatment facilities on Deer Island in Winthrop. Such a staging area would also generate considerable volumes of truck traffic.

FST's initial work in this project consisted of an extensive data collection effort. Information has been collected regarding traffic conditions, land use patterns, property ownership, locations of utilities, roadway

characteristics, load limits on the area's bridges, location of sites of historic significance, etc. Simultaneous with the collection of this data has been the development of a set of 13 alternative roadway schemes which have, in turn, been evaluated using the data described above. Drawings have been prepared at both 100-scale and 40-scale showing details of each scheme. Preliminary plans based on a 1986 aerial photogrammetry flight and originally produced for the MBTA were used as the base for these drawings.

Figure 1 illustrates the general layout of the 13 South Boston Bypass Road schemes. Each scheme is briefly described in the following paragraphs. Also given are brief comments regarding potential impacts of each scheme. For those sections of the Bypass Road of roadway not utilizing existing streets, a 32-foot cross section has been assumed, consisting of two 12-foot travel lanes and two 4-foot shoulders. Information presented in the descriptions of each scheme was developed through research by FST and as a result of cooperation by the many agencies involved in this project.

Scheme A

Scheme A proposes a new roadway which would provide a direct connection between Southampton Street (and the Southeast Expressway) to the Summer Street/Congress Street/Northern Avenue area of South Boston. The alignment begins at Southampton Street, just to the east of the bridge over the

railroad/rapid transit tracks, drops down at a three percent grade (with retaining walls) to cross the existing Old Colony freight track, and then proceeds northward between this freight track and the two MBTA Red Line lead tracks into the Cabot Yard. Upon reaching the area of the so-called Midland Bridge, the alignment swings to the right to enter the railroad cut on the westerly side. After emerging from the railroad cut north of West Second Street, it passes on the westerly side of Conrail's existing freight yard, paralleling the property line of the abutting U. S. Postal Service parking area. Passing under Summer Street, the alignment then intersects with Congress Street and then can proceed to Northern Avenue (and the Fan Pier area) through a vacant lot. A connection to Massport's "Haul Road" could be made at a point near Congress Street.

- The location of the right-of-way between Southampton Street and the area of the Midland Bridge is such that it minimizes the conflict with the existing Old Colony freight track. However, it would seriously interfere with plans to construct new railroad tracks in this same location as part of the project to restore commuter rail service to the South Shore. If constructed now at this location, the roadway would have to be relocated when the railroad is constructed. Plans to restore commuter rail service are presently in

the environmental impact analysis stage with some preliminary design work in progress. Although such service could theoretically be implemented as early as late 1990 or early 1991, no construction funds have been authorized to date.

- The right-of-way would cross two active freight tracks; namely, the existing Old Colony freight track in the vicinity of Southampton Street and a new connection from the remaining track in the railroad cut to existing railroad facilities on the west side of the Midland Bridge. The form of crossing protection that would be required to be provided is unknown at this time.
- Removal of the westernmost track in the railroad cut would be required, leaving one freight track on the easternmost side of the railroad cut. Conrail prefers their planned one remaining track to be in this location.
- Location of the roadway on the western side of the railroad cut has the advantage of providing the potential to offer intermediate access points (such as Yard Way and Dorchester Avenue) without having to cross the active freight track.

- Connections to the Southeast Expressway both southbound and northbound (and thus to the Central Artery and the Massachusetts Turnpike) can be made via Southampton Street and which avoid the use of any residential streets in South Boston.

Scheme A-1

This scheme is a variation of Scheme A. The major difference between the two is the location of the right-of-way for the roadway between Southampton Street and the area of the Midland Bridge. In this arrangement, the right-of-way is located further to the east, thus theoretically allowing space between the roadway and the Red Line lead tracks for two tracks for the restored Old Colony commuter rail service. However, the existing Old Colony freight track would have to be contained within the cross section of the roadway itself for a considerable distance, thus presenting the potential for conflict. (Due to the scale of Figure 1, it is impossible to show the differences between Schemes A and A-1 on that Figure.) A variation within a variation, also shown on Figure 1, has Schemes A or A-1 connecting to Ellery Street and then to Southampton Street, rather than to Southampton Street directly. The portion of Ellery Street north of Dexter Street is presently a private street.

Scheme B

Scheme B is similar to Scheme A in that it provides a direct connection between Southampton Street and the northern portion of South Boston (Northern Avenue, etc.). However, between Southampton Street and the area of the Midland bridge, the roadway right-of-way is located to the west of the MBTA Red Line lead tracks to the Cabot Yard rather than to the east. The roadway would pass under the Midland Bridge to join the alignment of Scheme A through the railroad cut toward Northern Avenue.

- This scheme would require that at least one active track (Track 17) in Amtrak's new Southampton Street yard be removed in order to accommodate the roadway right-of-way. This track and others in the yard are heavily used on a daily basis for railroad passenger car maintenance. Because of the heavy demand for use of the tracks, additional tracks are planned to be constructed in the future. Thus, the loss of one track at this time would exacerbate an existing problem of not having enough tracks.
- A bridge structure would be required to carry the roadway over the ladder track at the southern end of Amtrak's yard near the roadway's intersection with Southampton Street.
- A substandard horizontal curve radius would be required in the alignment at the Midland Bridge.

- The planned Old Colony commuter rail tracks will pass under the Red Line lead tracks in this area in order to make connections with tracks to/from South Station. The Bypass Road (Scheme B) would interfere with the planned Old Colony tracks on the west side of the Red Line.

Scheme C

This scheme connects the Frontage Road of the Southeast Expressway to the northern portion of South Boston (Northern Avenue, etc.). It passes at-grade through Amtrak's Southampton Street yard to the vicinity of the Midland Bridge, to the east of which its alignment through the railroad cut and beyond is identical to that of Schemes A and B.

- Construction of this scheme would cause major disruptions (including required track removal and/or relocation) in Amtrak's yard.
- The at-grade crossing of several active tracks connecting Amtrak's yard with South Station would be required. Over 100 trains per day use these tracks today, with the number expected to double in the future. Each train movement could potentially block the roadway for up to 10 minutes.
- The right-of-way through Amtrak's yard area would have to be shared with Amtrak vehicles accessing their facilities.

- Modifications to the Frontage Road near its intersection with Scheme C would be made to allow two-way operations on the Frontage Road between this intersection and Southampton Street. Relocation further to the north of the northbound off-ramp from the Southeast Expressway to the Frontage Road would be necessary in order to allow this two-way operation on this portion of the Frontage Road to occur and in order to prevent conflicts between high-speed traffic leaving the expressway and low speed traffic egressing the Bypass Road.

Scheme D

Scheme D includes a loop-ramp connection from the railroad cut to Dorchester Avenue through a portion of the southern parking area of the MBTA's Cabot Bus Garage. Once in the railroad cut, the scheme follows the same alignment to Northern Avenue as Schemes A, B, and C, previously described. Retaining walls would be used in the construction of the loop ramp to minimize the amount of MBTA land required to be taken.

Once on Dorchester Avenue, access by construction-related vehicles to the Southeast Expressway/Central Artery would be via the Broadway Bridge, as the West Fourth Street Bridge presently has a 6-ton load limit and truck traffic through Andrew Square is being discouraged.

Scheme D can be operated by itself or in combination with another scheme. For example, the loop ramp associated with Scheme D could be constructed as part of Schemes A, B, and C to provide alternative routings for trucks using the rail cut. That is, trucks could access the Bypass Road either at Southampton Street or at Dorchester Avenue in this case. Scheme D could also operate as a one-way, eastbound-only ramp from Dorchester Avenue to the rail cut in combination with Scheme F (see description of Scheme F elsewhere in this report).

- The MBTA has major objections to this scheme, as they claim it would disrupt their activities at the Cabot Bus Garage and that the location of the loop ramp is in conflict with a proposed new tunnel directly connecting the southbound Red Line under Dorchester Avenue with the Cabot Maintenance Facility used by Red Line trains. (The proposed tunnel is at the 60-80 percent design stage, but apparently there are no funds committed for its construction.)

Scheme E

This scheme would provide a connection between the Northern Avenue area of South Boston and the Southeast Expressway/Central Artery via use of the West Fourth Street Bridge. The scheme could be used in conjunction with components of the existing truck route through South Boston and/or in conjunction with Schemes G or H described elsewhere in this report.

Scheme E would incorporate new eastbound and westbound connecting ramps to the West Fourth Street Bridge. The eastbound connecting ramp would be located on the south side of the bridge, looping from the bridge through a portion of a parking area of the MBTA's Cabot Bus Garage to a connection with Foundry Street. Westbound, a new on-ramp would be constructed from Foundry Street directly up to the bridge at a grade of approximately 6.4 percent. A new connecting roadway would be built from Foundry Street directly to West Second Street, requiring partial demolition of an old MBTA tunnel portal. (It appears that this tunnel is presently used to provide a routing for a dry standpipe connection to the Red Line tunnel below.) All vehicles utilizing this scheme would pass under the Broadway Bridge while on Foundry Street. The vertical clearance at this location is presently limited to 11 feet - 8 inches. Accordingly, the profile of Foundry Street would have to be lowered by approximately two feet to provide adequate clearance.

- The MBTA has objections to this scheme because they feel it would interfere with their operations within the Cabot Garage and that it would create traffic problems on Foundry Street. The MBTA uses Foundry Street as a major access road to the Cabot Garage.

- This scheme has the advantage of removing truck traffic from the busy intersections of Dorchester Avenue/Broadway and Dorchester Avenue/West Fourth Street.
- The scheme utilizes the remaining portion of the truck route, but West Second Street, which is presently one way (westward) between West Third Street and B Street, would become a two-way operation.
- The major problems associated with this scheme are the existing physical condition of the West Fourth Street Bridge and the timing for its replacement. The existing structure limits vehicle weight to a maximum of six tons. Thus, it is not suitable for use by construction-related trucks. It is planned that the existing bridge will be replaced by a new structure, which apparently is only in the preliminary stages of design. In addition, the Broadway Bridge is slated for repairs this year, with current thinking being that work on the West Fourth Street Bridge will not begin until the Broadway Bridge is completed. Thus, work on West Fourth Street will not begin before 1988 and <u>may</u> take 2-3 years to complete. Accordingly, a new West Fourth Street Bridge able to accommodate heavy trucks may not be available to 1990 or 1991, which would be too late to serve the immediate needs of the Fan Pier.

Scheme F

This scheme would provide a connection between Northern Avenue, etc. and the Southeast Expressway/Central Artery via use of the Broadway Bridge. As for Scheme E, it could be used either in conjunction with the existing truck route through South Boston or with Schemes G or H.

Scheme F features the construction of a new westbound on-ramp to the Broadway Bridge running direct from the intersection of West Second Street with Dorchester Avenue and a new roadway running from the intersection of Broadway and Dorchester Avenue through land currently occupied by a Sunoco Gas Station to a point on West Second Street. Similar to Scheme E, this scheme would require that West Second Street be made two-way between West Third Street and B Street.

- The Broadway Bridge is scheduled to be repaired during 1987 and will be reduced to two lanes while under repair. Sources disagree as to whether the bridge, once repaired, will be able to accommodate only its current posted maximum 22-ton vehicle weight limit or if it will be upgraded to a 36-ton limit.
- In any case, the bridge is scheduled to be replaced by the so-called Herald Street Bridge in the early 1990's as part of the Third Harbor Tunnel/Depressed Central Artery project. Thus, any investments in major roadway improvements to this bridge, such as a new westbound ramp from West Second Street, would be short-lived.

- A variation of Scheme F could be implemented which features only minor curb widenings in the vicinity of the Broadway Bridge (see Scheme G). These widenings would occur from southbound Dorchester Avenue onto the Westbound Broadway Bridge and from northbound Dorchester Avenue onto eastbound West Second Street. This arrangement would avoid the need to construct an expensive, short-lived ramp and the need to acquire the gas station business.
- The MBTA and others have expressed reservations about routing more trucks across the Broadway Bridge, as they believe that this bridge already experiences congestion due to existing traffic and, particularly, from the intersections at the west end of the bridge with Albany Street and the Southeast Expressway.
- As stated previously, a variation of this scheme could see Scheme F operated as one-way westbound in combination with Scheme D as one-way eastbound. That is, trucks leaving South Boston would reach the Broadway Bridge via the railroad cut and West Second Street. Trucks entering South Boston via the Broadway Bridge would turn right onto Dorchester Avenue after crossing the bridge and follow Dorchester Avenue south until reaching the Scheme D ramp down into the railroad cut, where they would travel northbound to their destination.

Scheme G

Scheme G could be implemented in combination with either Schemes E or F to access the Southeast Expressway/Central Artery. A new two-lane roadway with shoulders would be constructed between West Second Street and Northern Avenue through the railroad yard area, either to the west or to the east of the existing tracks. Traffic on West Second Street would also be two-way between West Third Street and either A or B Streets, depending on the alignment alternative chosen for connecting the railroad cut with West Second Street. Three options for connecting West Second Street to a new roadway alignment through the railroad storage yard were studied. Options included:

1. Construction of a new "T" intersection on West Second Street, located east of A Street and just west of the West Second Street bridge (Scheme G). This new intersection would eliminate the necessity of having to cross the weight-limit-restricted West Second Street bridge; however, it would require the partial or complete taking of private property (and building).
2. A widening and extension of Yard Way (adjacent to the U.S. Postal Service garage) from A Street into the railroad corridor (Scheme G-1). Included would be the rounding of the southern corner radius at the A Street/Yard Way intersection to improve the right-turn

movement and, possibly, other minor roadway improvements. Increased traffic volume through the A Street/West Second Street intersection would require upgrading of the present traffic signal equipment.

3. Replacement of the existing West Second Street bridge on a new alignment (Scheme G-2) utilizing Bolton Street would eliminate the restricted bridge and also provide an improved alignment to facilitate an extension of B Street to Summer Street.

Schemes G and G-1, as described above, would include a newly-constructed roadway connecting to Northern Avenue via the west side of the railroad yard and as utilized in this area by Schemes A, B, C, and D. Scheme G-2 would result in a different alignment on the east side of the railroad yard, with the alignment essentially being an extension of B Street. The alignments would all share a common right-of-way north of Summer Street.

- Scheme G-1, which utilizes a connection between the railroad corridor and West Second Street via Yard Way, could likely be implemented in the least amount of time, since it does not require the taking of any buildings (as does Scheme G) or the construction of a new bridge across the railroad cut (Scheme G-2). However, minor curb rounding and roadway widening would be required.

- Scheme G-2 requires that an active freight spur track be crossed at grade.
- Scheme G-1 could be implemented as a first step in the eventual implementation of other schemes utilizing longer portions of the rail cut, such as Schemes A, B, C, and D.

Scheme H

This scheme, and its companion Scheme H-1, improves the existing intersections of B Street with West First Street and West Second Street in order to better accommodate turning vehicles. North of this point, the general alignment follows that described previously for Scheme G-2 to the east of the railroad yard. Like Scheme G-2, the alignment north of Summer Street follows a routing common to all schemes. (In this regard, the routing for this and all schemes in the vicinity of Summer Street may vary from time to time as the Third harbor Tunnel is constructed in this area. However, the MDPW has given assurances that access for the Bypass Road between the railroad yard area and the Northern Avenue area will be maintained at all times.)

As part of Schemes H and H-1, the present one-way operation of West Second Street between B Street and West Third Street would become two-way.

In addition to the development of the various schemes just described, progress has also been made in several other areas, each of which is briefly described in the following paragraphs.

Reference was made in the description of Schemes A and A-1 regarding potential conflicts that could exist with the project to restore commuter rail service to the South Shore in attempting to construct a Bypass Road between Southampton Street and the vicinity of the Midland Bridge. This problem has been recently studied in more detail by the MBTA's consultant for the Old Colony project -- Sverdrup Corp. -- and it appears that at least two compatible solutions are possible. One solution would require that one of the MBTA's two lead tracks into the Red Line's Cabot Yard be taken out of service for approximately two years, to which the MBTA has strong objections. This solution would also result in a Bypass Road alignment having several rather sharp curves due to the proximity of two large buildings. The second solution proposed by Sverdrup provided for the possibility of constructing up to a four-lane Bypass Road through this area but required that the two Red Line tracks be relocated approximately 50-60 feet west of their present position. Sverdrup is currently in the process of developing cost estimates and construction schedules for these alternatives.

Fay, Spofford & Thorndike, Inc. was asked to determine the capacity of the Bypass Road, assuming a 100 percent truck utilization. Using three separate methodologies, it appears

that up to 500 trucks in each direction per hour could be accommodated along the roadway itself. Capacity at intersections along the roadway would be less than this figure.

URS was asked to produce estimates of truck traffic at various points on the Bypass Road resulting from the many activities proposed to occur in the South Boston Area. These estimates are currently in preparation and will apparently be presented for several time periods. Estimates of projected truck traffic can eventually be used as inputs to intersection capacity and level of service determinations along the Bypass Road.

In summary, there are still issues yet to be resolved for this project as of this time, but considerable progress has been achieved in developing and analyzing various alternative schemes for providing a South Boston Bypass Road. The timing of this project by the BRA has been fortuitous in that it has fostered dialogue among the various interested local, state, and federal agencies such that each is now more cognizant of others' objectives and problems while, at the same time, has helped to prevent the implementation of plans that would preclude the possibility of a Bypass Road being constructed.

The next major issue which needs to be addressed is that of a more-detailed traffic analysis. This analysis will be critical, as it will help to determine how well various intersections along the Bypass Road alternatives will perform under projected truck generation and distribution assumptions.

Also, the analysis will also result in a determination of how many, if any, additional non-construction-related trucks could be allowed to use this road. Because only a few of the alternatives which were studied could be implemented within the time frame necessary to serve the Fan Pier Project, it is suggested that the detailed traffic analysis be limited to those schemes with the most promise.

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